



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,454	03/30/2004	Koujiro Kameyama	14225-046001 / F1040123US	3138
26211	7590	05/01/2006	EXAMINER	
FISH & RICHARDSON P.C. P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			MONDT, JOHANNES P	
			ART UNIT	PAPER NUMBER
			3663	

DATE MAILED: 05/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/812,454	Applicant(s) KAMEYAMA ET AL.	
	Examiner Johannes P. Mondt	Art Unit 3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2006 and 14 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-30 is/are pending in the application.
- 4a) Of the above claim(s) 9-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/17/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Amendment filed 2/17/06 forms the basis for this office action. In said Amendment, filed in apparent response to a Miscellaneous Action mailed 1/24/06 in which it had been indicated that a previous amendment filed 11/14/05 was not fully responsive, applicant cancelled claims 1-8 and added new claims 23-30 in relation to the claims filed 7/6/04.

Information Disclosure Statement

The examiner has considered the items listed in the Information Disclosure (IDS) statement filed 2/17/06. A signed copy of Form PTO-1449 is herewith enclosed.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 23, 25, 26, 28 and 30** are rejected under 35 U.S.C. 102(b) as being anticipated by Yamada et al (Japanese Patent Publication with publication number 2000-173766; embodiment of Drawing 7).

On claim 23: Yamada et al teach (see the embodiment defined by Drawing 7 and [0025]-[0077]) an optical semiconductor device (title and abstract), comprising: an

optical semiconductor element 2/3/4/5/6 ([0025]) having a circuit portion 2/3/4 and front portion of 6 (loc.cit.) including any one of a light receiving element and a light-emitting element 5 (loc.cit.) on a surface thereof; a terminal portion (back portion of 6) (N.B.: 6 runs from the back to the front of said optical semiconductor element; cf. Drawing 7) which is provided on a back surface (upper surface in Drawing 7) of the optical semiconductor element and electrically connected with the circuit portion; a covering layer 1 ([0025]) which covers the surface of the optical semiconductor element and is made of a transparent material ([0025]); and a sealing resin 33 ([0064][0072]) which covers side surfaces of the optical semiconductor element (Drawing 7). Furthermore, the back surface of the optical semiconductor element is covered with the sealing resin 33 ([0065]-[0072] and Drawing 7), and the terminal portion (back portion of 6) is exposed from (interpreted as: "to") the sealing resin (Drawing 7) near the back of the optical semiconductor element (as well as the front: see Drawing 7, wherein sealing resin 33 covers terminal portion 6 both near the front and near the back of the optical semiconductor element).

On claim 25: the circuit portion and the terminal portion are connected by a penetrating (counter) electrode 6 provided in the optical semiconductor element as electrode 6 runs from the back to the front (Drawing 7; see also [0025]), hence extending throughout the optical semiconductor element in the thickness direction (Drawing 7).

On claim 26: the circuit portion 2/3/4 and front portion of 6 of the optical semiconductor element and the terminal portion (back portion of 6) are connected

through a portion of 6 ([0025]) elongating along a side surface portion (Drawing 7) of the optical semiconductor element covered by the sealing resin 33 (Drawing 7 and [0064]-[0065]).

On claim 28: each of the side surfaces of the optical semiconductor element are inclined surfaces because said side surfaces form the interface of counter electrode 6 and sealing resin 33 while counter electrode 6 has an inclined portion deviating from the horizontal and vertical orientation.

On claim 30: a boundary between the optical semiconductor element 2/3/4/5/6 and the covering layer 1 is covered with the sealing resin at least through the coverage of the two points at which regions 1, 6 and 33 abut (Drawing 7).

3. **Claims 23, 24, 27, 29** are rejected under 35 U.S.C. 102(b) as being anticipated by Badehi (US 2001/0018236 A1). Badehi teaches (see Figure 2A, title, abstract and [0038]-[0041]) an optical semiconductor device (title and abstract; microlens array 100), comprising: an optical semiconductor element 100 ([0039]) having a circuit portion 112 including any one of a light receiving element and a light-emitting element (microlens array 100 is light receiving element) on a surface thereof; a terminal portion 108 ([0039]) which is provided on a back surface (cf. Figure 2A) of the optical semiconductor element and electrically connected with the circuit portion; a covering layer 114/116 ([0040]) which covers the surface of the optical semiconductor element and is made of a transparent material ([0041] and [0051]-[0052]; N.B.: SU-8 is transparent; see, for instance Eldridge et al (US 2003/0099737 A1), not as prior art but only to ascertain fact); and a sealing resin 104/118 ([0039]-[0040]) which covers side surfaces of the

optical semiconductor element (Figure 2A). Furthermore, the back of the optical semiconductor element is covered with the sealing resin through resin portion 104, and the terminal portion 108 is exposed to ("from") the sealing resin near the back of the optical semiconductor element (Figure 2A).

On claim 24: the back surface of the optical semiconductor element is covered with an insulating layer 106 ([0039]) and the terminal portion 108 is formed on a back of the insulating layer (Figure 2A).

On claim 27: a bump electrode 110 ([0039]) is formed on a back of the terminal portion.

On claim 29: side surfaces (side surfaces towards the outside, of 116) of the covering layer 114/116 are covered with the sealing resin 118 ([0039]-[0040]).

Response to Arguments

Applicant's arguments filed 2/17/06 have been fully considered but they are not persuasive.

In particular, applicant's first argument appears to be based on the limitation in new claim 23 additional over cancelled claim 2 when written in independent form ("near the back of the optical semiconductor element"), namely: that "neither JP 2000-173766 nor Badehi (US 2001/0018236) discloses or suggests the subject matter of new claims 23-30", and in particular, applicant's argument that JP 2000-173766 "in contrast" to showing the terminal portion exposed *near the back* of the optical semiconductor element " (as required by the claim language) "clearly shows the counter electrode 6 is

exposed from the resin layer 33 near the transparent substrate 1 at the *front* of the device" (see Remarks, page 7). However, 6 clearly is exposed to ("from") 33 both at its front and near the back. See Drawing 7.

Because this first argument of transverse is the only one addressed to Yamada et al (JP 20010-173766) it follows that the rejections over Yamada must be maintained.

The above allegation of the first argument also fails to convince in the case of Badehi because terminal portion 108 in Badehi (Figure 2A as cited) is exposed to ("from") the sealing resin 104 near the back of the optical semiconductor element 100. Here applicant is advised that the adjective "near" (= "not far distant", see Webster's Collegiate Dictionary, 10th Edition, page 775) is a term of relative degree and thus introduces indefiniteness in the claim language of all pending claims of the elected invention (23-30), as pointed out overleaf under the rejections of claims 23-30 under 35 USC 112, second paragraph.

Finally, applicant's second argument that the circuit portion by Badehi does not include any one of the light-receiving element and a light-emitting element" (page 7 of Remarks) is in error because the embodiment of Figure 2A is a light receiving element (see [0039]).

In view of the above considerations the newly added claims 23-30 have been rejected over Yamada et al and Badehi as cited in the previous action on the merits.

With regard to the Drawings, Replacement Sheet for Figure 7 as filed 11/14/05 has been accepted.

With regard to the objection to the claims, the objection remaining in light of the amendments has been withdrawn but only because from the explanation and specification it is clear that only one interpretation of the language is possible: "exposed from" in applicant's language, means "exposed to".

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Johannes P. Mondt whose telephone number is 571-272-1919. The examiner can normally be reached on 8:00 - 18:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack W. Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JPM
April 27, 2006


JACK KEITH
SUPERVISORY PATENT EXAMINER